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National hospital costs for pulmonary mycobacterial diseases in the US from 2001 to 2012

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ABSTRACT

Introduction: Pulmonary mycobacterial diseases describe both tuberculosis (TB) and nontuberculous mycobacteria (NTM). TB is an established public health issue and a reportable disease. Efforts in treatment and surveillance have resulted in the incidence of TB to decrease in recent years. However, the incidence of NTM is increasing, classifying NTM as an emerging public health problem in the US. Despite the increasing importance of pulmonary mycobacterial diseases, few data are available measuring the cost burden of mycobacterial diseases at the national level. The purpose of this study was to evaluate the cost burden and measure emerging trends in hospitalization of pulmonary TB and NTM in the US from 2001 through 2012.

Methods: This study was a retrospective community-based cost analysis of hospitalized patients with a principal diagnosis of pulmonary mycobacterial diseases from 2001 through 2012. Data for pulmonary TB and NTM were retrieved from the Healthcare Cost and Utilization Project (HCUP), US Department of Health and Human services. Data included in this analysis were national hospital costs, payer sources, hospital lengths of stay, in-hospital mortality, and discharge information. The statistical significance of observed trends of NTM and TB national hospital costs were calculated using Poisson log-linear regression. National hospital costs for NTM and TB were projected in relation to health care inflation for each year. A regression model was applied to test the correlation between historic and projected national hospital costs.

Results: From a total of 36,484,846 admissions, 20,049 hospital admissions were reported for pulmonary NTM and 69,257 for pulmonary TB in the US from 2001 through 2012. The total associated costs of these admissions was $1,337,939,745,325, an estimated $970,643,222 of which was directly associated with pulmonary NTM and $3,390,013,793 for pulmonary TB. During the study period, the national hospital costs of pulmonary NTM increased at a statistically significant rate in the US over each year ($P = 0.001$). A linear regression analysis demonstrated a high degree of correlation between NTM historic and projected national hospital costs ($R = 0.938$, $P < 0.001$). However, no such correlation between historic and projected national hospital costs was found for pulmonary TB ($R = 0.284$, $P = 0.372$).

Conclusions: The total estimated cost of inpatient care of pulmonary NTM in the US during the study period was almost $1 billion. The cost of NTM management year after year is

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likewise increasingly significantly at a rate consistent with healthcare inflation. In contrast, pulmonary TB national hospital costs were decreasing during the study period. These trends emphasize the considerable and increasing burden of pulmonary NTM in the US. Given that the majority of patients with pulmonary NTM are never admitted to the hospital, the total economic burden of this disease is tremendously higher than measured in this study. These results emphasize the importance of continued research of pulmonary NTM in order to improve current guidelines in prevention and treatment strategies.